

Seyed Ali Akhavani

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[Github](#), [Stack Overflow](#), [Linkedin](#)

Education

- 2019 – present **PhD candidate in Computer Science**, [Northeastern University](#).
Courses: Software Vulnerabilities and Security, Machine Learning, Network Fundamentals, Intensive Computer Systems, Advanced Algorithms, Cyberlaw
- 2014 – 2019 **B.Sc in Computer Engineering**, [University of Tehran](#).

Publications

- 2021 **Browserprint: An Analysis of the Impact of Browser Features on Fingerprintability and Web Privacy**, *ISC 2021*, Available [Here](#).
- 2022 **PriveShield: Enhancing User Privacy Using Automatic Isolated Profiles in Browsers**, *Under Submission*.
- 2023 **TroWAF: Bypassing Web Application Firewalls Using HTTP Request Fuzzing**, *In progress*.

Work Experience

- Jun 2017 – Aug 2019 **Software Engineer**, [TAPSI](#), Tehran, Iran.
- Aug 2019 Tapsi is a private-cab e-hailing and ride-sharing platform equivalent to Uber which is used by millions of users daily. Started there as intern, was offered a full-time job afterwards, and was promoted to a senior later. Contributions on DevOps and Software Development projects:
- Co-designed the base infrastructure of a project with more than 20 micro-services.
 - Improved product's performance and number of concurrent rides by 300%. From 5k online rides to more than 20k)
 - Reduced web application's response time by 50% by optimizing inter-service communication between micro-services. Setting up message queues, pub-sub, and stateless http messaging. (Rabbitmq, Redis)
 - Deployment automation and containerization of the products' huge code base. (Docker, Docker Swarm (formerly), Kubernetes, Salt, Gitlab CI).
 - Setting up VMware ESXi on company's servers and managing them via VSphere.
 - Managed a hacking incident. Detecting the attack, blocking access, fixing damages, and coming up with security procedures to prevent future incidents.
 - Designed microservice log and monitoring system (Elastic Search, Prometheus, Grafana)
 - Data storage, caching, replication, and object storage. (Redis, Mongodb, PostgreSQL, MinIO)
 - Load balancing to handle millions of concurrent requests. (Nginx, Traefik)
 - Implemented a variety of features for the web application; including user management, media services, and developing a program which simulated the whole ride scenario. (Node.js, Python)
 - Implemented a dynamic automatic pricing model based on analyzing ride supply and demand. (Node.js, Python)
- Jun 2016 – Jul 2017 **Software Engineer and Co-Founder**, [Lambede](#), Tehran, Iran.
- Jul 2017 Designed and developed the entire web application from scratch. Lambede was a platform similar to Task Rabbit that connected people who needed services with experts willing to work. This project was me and my friend's startup idea during our undergrad. (Node.js, MongoDB, HTML, CSS)

Honors and Awards

- 2022&2023 **Blackhat USA Student Scholarship**.
- 2018 **Best Undergraduate Thesis Project Award**, *University of Tehran*.
- 2016 **ACM Student Chapter Excellence Award**.

Research Experience

- Sep 2019 – present **Research Assistant at Systems Security Lab (SecLab)**, *Northeastern University*, Boston.
Researching Web Security and Privacy. Contributions:
- Enhancing User Privacy Using Automatic Isolated Profiles in Browsers by adding an extra layer of security to browsers to prevent re-targeted ads from being displayed.
 - Analysis of the Impact of Browser Features on Browser Fingerprinting and generating a public list of browser fingerprinting APIs.
- Mar 2018 – **Blockchain Analysis**, *Supervised by Dr. Ghanbari and Dr. Bahrak*, University of Tehran.
- Sept 2019 Extracting transaction data from different cryptocurrency blockchains. Analyzing different types of cryptocurrencies' transaction graph, Including Bitcoin and Ethereum.

Computer skills

- Experienced Node.js, C, C++, Python, Docker, Docker Swarm, Linux, Redis, Rabbitmq, Nginx, HTML, CSS, Javascript, PostgreSQL, Mongodb, Traefik, MinIO, Salt, Prometheus, Grafana, Elastic, VMware, VSphere, Git, GDB
- Familiar Amazon AWS, Java, Kubernetes, R, Kafka, Ansible, Memcached, Ruby on Rails, Apache Tomcat, Maven, Django, D3.js

Selected Projects

- 2016 **Tandori**.
My first freelance project that has now become successful and is having a decent user base. Designed and implemented the web application for a cooking education network and social media. (Node.js, MongoDB)
- Fall 2019 **Linux Simple ELF Virus**.
A virus that infects ELF binaries in linux. (C, Bash Script) [Repo](#)
- Fall 2020 **CDN Setup**.
Implemented a complete CDN setup using Amazon EC2 that included DNS redirection, caching, and load balancing based on network performance. (Python, Shell Script) [Repo](#)
- Spring 2021 **Program Checkpoint Creator**.
Implemented a checkpoint program that enables saving a checkpoint for an executable when interrupted, then restarting it from where it was paused. Used dynamically linked library and other advanced concepts in C for implementation. (C) [Repo](#)
- Spring 2017 **Multiplayer Snake**.
Multiplayer snake game that supports up to 4 users. (Java, Python) [Repo](#)

Volunteer Experience

- Feb 2016 **Event Organizer**, *UTsec CTF*, University of Tehran.
Organizing a CTF contest and security workshop with topics related to Web Exploitation, Forensics, Reverse Engineering, and other cybersecurity materials.
- Nov 2015 – **Board Member**, *ACM Student Chapter*, University of Tehran.
- Nov 2017 Organizing coding contests, talks, workshops, and classes including ACM ICPC and F1 scientific magazine.
- Jun – Oct **Coding Mentor**, *Summer of Code*, University of Tehran.
2017 Teaching Web Development to undergraduate students to develop web applications. Also managing their projects and delegating tasks to each student.

Teaching Assistantship Experience

- 2022-2023 **Software Vulnerabilities and Security**, *Northeastern University*.
- Fall 2018 **Network Security**, *University of Tehran*.
- 2018 **Operating Systems**, *University of Tehran*.
- Spring 2018 **Internet Engineering**, *University of Tehran*.
- Spring 2018 **Software Engineering**, *University of Tehran*.